

HARDY-WEINBERG PRACTICE PROBLEMS**Do all work on a separate piece of paper!!!!**

1. The inability to taste PTC paper (t) is recessive to being able to taste it (T). At William Fremd High School, 243 out of the 2700 students are unable to taste PTC paper. Calculate the frequency of homozygous dominant individuals, heterozygous individuals, homozygous recessive individuals, and the frequencies of the T and t alleles in our school population.
2. Just down the road at Palatine High School, it has been found that there are an unusually high number of students with the recessive pirate (p) trait. Students with this recessive trait are known to wear an eyepatch and compulsively utter “Arrrrrrr” for no apparent reason. Being normal (P) is dominant to this trait. Out of the 2,000 students there, 320 have this recessive trait. What is the frequency of heterozygous individuals at Palatine High School? What “Arrrrrrr” the frequencies of the dominant and recessive alleles for this trait at Palatine High School? (Sorry, broke into a little pirate myself there!)
3. Having mid-digital hair (hair on the skin of the second bone in your finger) is dominant to not having hair there. At Harper College, 7350 out of the 15,000 students have no mid-digital hair. Calculate the frequency of individuals who are homozygous recessive, heterozygous, and homozygous dominant. Also give me the frequency of the dominant mid-digital hair allele (H) and the recessive no mid-digital hair allele (h).
4. Having a second toe longer than your big toe (T) is dominant to having a longer big toe (t). At the University of Illinois, out of the 31,200 undergraduates enrolled, 19,968 have a longer big toe. (Remember, dominant does NOT mean more common). What are the frequencies of the dominant and recessive alleles at the University of Illinois? What are the frequencies of the homozygous dominant and heterozygous individuals?
5. When you cross a red radish with a white radish, you get all purple radishes. Crossing two of the purple radishes then results in offspring in a ratio of 1 red: 2 purple: 1 white. In my garden, out of the 500 radishes I planted, 80 were white. How many would be expected to be red? How many would be expected to be purple? What is the frequency of the white allele in my garden? What is the frequency of the red allele in my garden?

6. ACHOO Syndrome is a dominant disorder which causes people to sneeze uncontrollably in response to a stimulus such as looking at bright lights. In a population of 21,000 students at Illinois State University, 5250 students were found to not have ACHOO Syndrome. What is the frequency of the recessive allele at ISU? How many heterozygous students attend ISU? How many homozygous dominant students?

7. The frequency of the recessive sickle cell anemia allele in the human population is 5%. What is the frequency of the dominant allele for normal red blood cells? What percent of the human population is homozygous recessive for sickle cell anemia? What percent are heterozygous? What percent are homozygous dominant?